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The Pathology of Club-foot and Electro-Massage and Me- chanical Treatment of the same.

READ BEFORE THE BALTIMORE MEDICAL ASSOCIATION,
REGULAR MEETING, JAN. 26, 1874, BY J. J. CALDWELL, M.D.

Permit me Mr. President and Gentlemen to occupy a few moments of this pleasant occasion in considering duplex cases of *Club-Foot* and their treatment.

The learned Professor Crosby, before a late meeting of the Pathological Society of New York, said ;—It is the theory of the Orthopædists that the atrophy, diminished temperature and Cyanotic appearance are due to the bending of the Vascular channels out of their natural position, by which both the ingress and the egress of blood is much diminished and retarded. If in a case of Congenital Talipes the foot is immediately carried into a normal position and retained there, the bent vessels are straightened, and the foot and leg may then be fully nourished and Atrophy avoided. The astralagus is so deeply received between the malleoli, and so firmly held by the lateral ligaments that the motion of the flexion and extension are alone permitted. The ankle is thus seen to be purely a Ginglymoid (or hinge-like) articulation.

Our knowledge of Anatomy teaches us that of the twelve muscles passing from the leg to the foot, nine are inserted anterior to the medio-tarsal articulation, (or in front of the articulation of the last row of Tarsal bones with the upper extremities of the meta-tarsal bones); the three remaining muscles, namely:—The Gastrocnemius (or belly muscles) Soleus, (or Sun-fish muscle) Plantaris (or base muscles) are all inserted to the tuberosity of the os calcis (or Spur-bone.) It is at the Medio-tarsal articulation that the distortion of club-foot occurs. In Talipes Calcaneus the ankle is in fault, but in no other variety; and hence here the term, club-foot, is a mis-nomer.

In Talipes Equinus the heel seems to be drawn up, as though the distortion was at the ankle; but a careful examination will show that the heel is not drawn up, but the foot, anterior to the medio-tarsal articulation, has dropped downward, the result of Paralysis of the extensor muscle.

In the Cavo-Varus, (or twisted arch) the plantar fascia is much shortened and contracted, by which the antero-posterior arch of the foot has been exalted, and a Talipes Cavus engrafted on the other distortion. In Varus the deformity is due to Spastic (or jerk-like) contractions of the anterior tibial, and measurably of the posterior tibial muscles. The Peroneal, (or fibular muscles) are Paralytic, thus the tibial muscles rotate the foot inward; lastly, the tarsal bones, from continued pressure and neglect of proper treatment must become permanently misshaped and deformed, hence the necessity of remedial efforts, while these plastic tissues are amenable to restoration: So much, Mr. President, for Dr. Crosby's Graphic descriptive Pathology. By it we hope to be able successfully to illustrate the following typical duplex of Cavo-Varus with a satisfactory result:

Augusta R. aged 6 years, born of healthy parents and free from hereditary taint, presented a few months ago, suffering from congenital club-foot, as above named, in the early days of infancy was unsuccessfully treated for this deformity, as this Photograph will illustrate. It may be plainly seen that both inferior extremities are implicated—First, by the Varus (or twisted) and superadded to that the Cavus, or (arched club-foot). Our mode of treatment was as follows:—First, to tone up these paralytic muscles and nerves, and revitalize these atonic vessels, with a view of re-establishing nutrition to these parts. We made daily alternating application of the Galvanic and Faradaic currents, their values being materially different and essential. By the Galvanic current we re-establish the lost temperature and circulation and nutrition. By the Faradaic application the muscular irritability and contractions and elasticity are restored. We also ordered the limbs to be shampooed or massaged (from the Arab *Massa* or the Greek verb *Masso*, to knead.) This treatment was made famous by Dr. Metzger, of Bonn, in the treatment of Joint diseases. His reputation was greatly increased in his successful treatment of the Danish Crown Prince. Thus we have combined these modes and term it the Electro-Massage Treatment. In this case we also instruct the parent in daily application of rubbing the affected part with the Phosphated Oils, another source of nutrition to the nerve peripheries, and mobility to the relaxed tissues—furthermore to overcome the deformities we apply the club-foot shoe and lateral brace of such construction as to give free vascular and muscular action and yet maintain all the parts in a natural position, with NO MODERATE DEGREE OF SUCCESS as my late pamphlet will indicate. To this little girl we have been able to restore at this early state of treatment, much of the rotundity, form and shape of the affected parts. I am encouraged to hope soon to be able to present the case to you in *persona propria*, fully developed. For the few cases we have successfully treated by this mode we modestly refer you to the pamphlet or the cases related before the faculty of this State at its last Annual Meeting.

In Electro-Massage the hand of the operator must be the Electroid, thus each faulty weakened muscle must be found, massaged and revitalized. With this little patient the treatment has so restored the Dorsalpedes muscles as to have greatly elevated the Tarsal bones; by it also the plantar fascia has been expanded, lengthened and strengthened, having the effect of lowering and graduating the arches; again the tibial and fibular muscles have been so co-ordinated and retuned as to invert the foot and give a natural rotundity to the legs; indeed we must confess surprise, especially in this case to have witnessed so rapid and so effectual an issue, for there remains none of the coldness, blueness or pale and shriveled appearances, and comparatively little of the old distortion. The shoes we believe are the simplest used in club-foot troubles, being a modification of Dr. McLean's excellent apparatus as you will see. On the inside of the shoe and fixed to the sole is a sheet of steel or metal so reflected as to cover the articulation of the great toe and the neighboring parts and attached to middle third of the outer border of the sole (the hollow) is a lateral steel splint, light and elastic, extending up to and above the calf, where the leg is encircled by another and light steel band. At the base or nearly so is a hinge-like joint to work in harmony with the ankle. With this assistance she is enabled to walk to and from our office to her home a mile away without pressure upon the old callosities on the external border of each foot, upon which she has walked so long and painfully in days gone by. The Anatomical plates I offer to illustrate this case, Mr. President, is a most excellent one,—from that admirable work on the vascular system, &c., by America's oldest and noblest Surgeon; I refer, sir, to our own venerable Emperor, Nathan R. Smith.

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